Semester	IV	Specialization	Information Technology
Course Code	408IT	Type	Subject - Elective
Course Title	Software Testing Methods		

Course Objectives:	
1	To understand scope of Software Testing Activity
2	To learn tools and techniques of Software Testing
3	To develop skill to design suitable test procedure in a given software development environment

Syllabus:

Unit Number	Contents	Number of Sessions
1	**Software Testing Principles:** Basic concepts - Need of testing , errors, faults, defects Defects – Process defects, design defects, data defects Reducing the frequency of defects in software development Factors affecting software testing Testing constraints Life cycle testing Tester's workbench	5+1
2	**Levels of Testing:** Verification and Validation Functional and Structural Testing Static and Dynamic Testing V Concept of Testing with Testing Stages **Types of Testing:** Unit Testing, Integration Testing, System Testing- Performance, Load, Stress, Volume Testing, Regression Testing, Alpha, Beta and Acceptance Testing , Functional Testing, Performance Testing, Recovery Testing, White Box Testing, Black Box Testing, Gray Box Testing Security testing- Types of Security Testing:	5+1

	Network Scanning, Vulnerability Scanning, Password Cracking, Log Reviews, File Integrity Checkers, Virus Detectors, Penetration Testing Usability Testing Manual versus Automated Testing Static versus Dynamic Testing Compliance Testing	
3	**Test Management:** Testing Life Cycle – Roles and activities, Test Planning – forming a test team, develop test plan reviews, structured walkthroughs Test Cases design strategies **Test Execution:** build test data, life cycle of defect, defect tracking, defect detection stages, defect detection stages, defect types, defect severity, defect analysis and prevention.	5+1
4	**Functional Testing(black box)**: random testing, equivalence class partitioning and boundary value analysis, Cause effect graphing, Syntax testing **Structural Testing(white box)**: test adequacy criteria, coverage (Branch and decision coverage, path coverage) and control flow graphs, paths, loop testing, mutation testing. Black Box testing versus White Box Testing	5+1
5	Overview of testing tools including open source tools for software testing	5+1

Learning Resources:		
1	Text Books	Effective Methods for Software Testing, William E Perry, 2nd Edition, Wiley Publication
2	Reference Books	Practical Software Testing, Iien Burnstein, Springer Publication, 2003 Software Testing and continuous Quality improvement, William E Lewis, CRC Press, 2009 Software Engineering , Pressman, Fifth Edition
3	Supplementary Reading Material	

4	Websites	www.onestoptesting.com
5	Journals	Software Testing, Verification and Reliability, Wiley Automated Software Engineering, MetaPress